

Determinants of digital marketing adoption among startups in developing countries: Evidence from Vietnam

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Abstract

International studies on digital marketing have taken various approaches, but research on its adoption among startups in developing countries like Vietnam remains limited. As startups grow in these regions, investment in digital marketing has become increasingly critical for improving market reach, operational effectiveness, and long-term competitiveness. This study, therefore, aims to analyze and identify the most influential factors - both direct and indirect - affecting digital marketing adoption by startups in developing countries, with a focus on Vietnam. Using a research model based on the TOE framework, TAM, and UTAUT, the methodology included a qualitative study, a preliminary quantitative phase, and a formal quantitative analysis based on 551 valid survey responses from startups across various industries in Vietnam. The findings indicate that technological, organizational, and environmental factors exert direct and indirect effects on digital marketing adoption behavior among startups in Vietnam, with potential relevance to similarly positioned emerging markets. Consequently, enhancing technological capabilities, fostering skills and creativity within the business, and strengthening competitive capacity are likely to encourage digital marketing adoption among innovative startups, thereby strengthening their long-term competitiveness in dynamic markets.

Keywords: Digital marketing, Startups, Emerging markets, TAM, TOE, Technology adoption.

Introduction

Digital marketing has developed into a diverse field of research with a range of approaches. Notable studies have explored consumer behavior, including the works of Hayes et al. (2009) and Alexa et al. (2012). Additionally, research on digital marketing's application in business management and operations has gained traction, with significant contributions from Taiminen and Karjaluo (2015) and Nuseir and Aljumah (2020). Recently, there has been increasing interest in understanding how digital marketing supports startup growth, competitiveness, and long-term development, particularly in response to rising consumer awareness and advocacy for sustainable practices (Saura et al., 2020; Rosario et al., 2023; Low et al., 2020). Despite this growing body of research, empirical evidence on digital marketing adoption among startups in developing countries remains limited (Bruce et al., 2023; Emini and Merovci, 2021).

In this context, the Fourth Industrial Revolution has had a profound impact on daily life and business, making the role of digital marketing ever more critical. For example, Ghana has seen a surge in internet users, with over 17 million users according to recent data, positioning it as West Africa's fastest-growing internet market among developing countries (Bruce et al., 2023). From 2022 to 2025, Ghana also reported over 22 million internet users annually (Statista, 2025). Similarly, Jashari and Rustemi (2017) found that in Kosovo, approximately 59% of respondents made unplanned purchase decisions based on online information, with 61.5% influenced by social media reviews from friends. In Vietnam, Datareportal and Wearesocial (2024) reported that 73.2% of the population uses the internet, with 78.1% actively engaged on social media platforms. These trends underscore digital marketing's growing relevance in both personal life and business in Vietnam and other developing countries. Despite these opportunities, digital marketing adoption remains relatively limited among small and medium-sized enterprises (SMEs). In Ghana, for example, SMEs continue to lag larger firms in adopting digital technologies (Ahene Djan, 2021). Similarly, in Kosovo, companies remain hesitant to use social media as a primary communication tool, largely due to a perceived imbalance between benefits and costs (Ejupi, 2017). This gap highlights the need to better understand the factors influencing digital marketing adoption, particularly among startups operating in developing-country contexts.

In addition, startups have become increasingly important in promoting economic growth in developing countries. Specifically, in Indonesia, SMEs are considered the backbone of the economy. Statistics Indonesia (2019) reported that 98.68% of businesses fall within the micro, small, and medium enterprise categories, collectively employing 75.33% of the workforce. Despite a slight decrease from 61.41% in 2017 to 61.07% in 2020, the contribution of SMEs remains significant (Indonesian Ministry of Finance, 2019). In addition, the General Statistics Office (2023) of Vietnam reported that over 165,000 businesses were either newly established or resumed operations during the first nine months of 2023, largely driven by newly formed enterprises, illustrating the sector's resilience amidst global uncertainties and post-pandemic challenges. Consistent with these trends, Bruce et al. (2023) emphasize SMEs' significant role in Ghana's economic growth, with SMEs accounting for 92% of businesses and contributing approximately 70% to the GDP.

Digital marketing offers several advantages over traditional marketing approaches,

including cost efficiency, more precise performance measurement, and enhanced customer segmentation and targeting. Given these benefits and increasing internet penetration, it is important to understand the factors that facilitate digital marketing adoption among startups in developing economies. Accordingly, this study examines the key determinants of digital marketing adoption among startups in developing countries, using Vietnam as an illustrative emerging market context. Although the transferability of the findings to other cultural and institutional settings requires further investigation, the results may provide valuable insights for startups operating in similar emerging economies and contribute to a better understanding of how digital marketing capabilities can support long-term competitiveness and organizational development.

Theoretical Background

Digital Marketing in the Context of Sustainable Development

Digital marketing remains a prominent area of inquiry and discussion within the marketing field. It involves the use of digital media and online platforms to create personalized user experiences and enhance interactions between businesses and customers. Existing research highlights two main perspectives: a customer-centric approach that prioritizes consumer needs and satisfaction (Philip, 2002), and a business-oriented approach that focuses on optimizing marketing activities for organizational effectiveness (Chien, 2015; Lamberton and Stephen, 2016). Alternatively, Smith (2022) offers a more comprehensive definition of digital marketing, describing it as an integration of the internet, data, digital technologies, and traditional media to achieve a business's marketing objectives. This definition broadens digital marketing to encompass all marketing activities on digital and internet platforms, aligning these efforts with the overall business goals while keeping the customer at the center of marketing strategies.

With the acceleration of digital transformation, the role of digital marketing in promoting sustainable development has become more significant. According to Rosário et al. (2023), digital marketing acts as a powerful driver of sustainability by (1) fostering awareness and education through digital platforms, (2) promoting green economies and eco-friendly consumption, (3) encouraging behavioral change through digital campaigns, and (4) facilitating the implementation of sustainable business models. Digital marketing not only supports environmental and social objectives but also aligns corporate communication strategies with global sustainability goals.

Specifically, digital marketing leverages a variety of online tools such as social media, blogs, and interactive campaigns to disseminate knowledge about environmental challenges and sustainable practices (Eisenschink et al., 2022). First, targeting and segmentation tools can be used to enable marketers to tailor sustainability messages to specific regions or populations most affected by environmental issues (Morais et al., 2016). As a result, digital marketing helps to enhance public awareness and understanding of sustainability concerns. Second, digital marketing contributes to the growth of the green economy by raising awareness of environmentally responsible consumption and showcasing sustainable products and services. Online platforms allow businesses to communicate product attributes such as recyclability, energy efficiency, or reduced carbon footprints to global audiences (Ghalwash et al., 2022; Imran et al.,

2023). By connecting with environmentally conscious consumers, firms can expand markets for sustainable alternatives and stimulate demand for eco-friendly solutions. Third, through data-driven targeting and persuasive storytelling, digital campaigns can effectively motivate individuals to adopt sustainable lifestyles (Rosário et al., 2023). In the study by Zakic et al. (2022), the authors stress the importance of social media communities and role models in normalizing positive behaviors, such as energy conservation. Finally, the integration of digital marketing into corporate sustainability strategies supports the long-term development of business models (Rosário et al., 2023). Digital technologies enable firms to customize goods and services (Nasiri et al., 2022), better fulfill customer needs, and enhance customer service strategies (Elhusseiny and Crispim, 2022). Consequently, digital marketing not only enhances business competitiveness but also may support the integration of sustainability considerations into organizational identity and operations.

Startups

With rapid advancements in information technology and the emergence of numerous innovative business solutions, the term ‘startup’ has become increasingly popular in describing new enterprises, particularly those built on creativity and disruption, with the aim of achieving scalable growth and operational efficiency. According to Robehmed (2013), a startup can be defined as a company or project founded by an entrepreneur with the goal of discovering, developing, and validating a scalable business model. In the context of analyzing a specific developing country, the survey subjects in this study are startups in Vietnam. In addition to global perspectives on startup characteristics, this study also considers Vietnam-specific regulations. Specifically, Article 2, Clause 1 of Circular No. 01/2018/TT-BKHCN defines an innovative startup as a company with high growth potential based on the exploitation of intellectual property, technology, or a new business model, and with an operational period of no more than five years from the date of its initial business registration certificate.

Integrating TAM, UTAUT, and TOE for Comprehensive Research

The adoption of digital marketing in startups can be understood through technology acceptance theories. A central framework is Rogers’ (2003) Diffusion of Innovations (DOI) theory, which identifies five attributes shaping adoption: relative advantage, compatibility, complexity, trialability, and observability. Innovations that demonstrate clear benefits, align with existing practices, and are easy to test and observe tend to be adopted more rapidly, whereas those perceived as complex face slower diffusion. In addition to DOI, the Technology-Organization-Environment (TOE) framework, developed by Tornatzky et al. (1990), has been widely applied in organizational settings to understand technology adoption. Although DOI and TOE can offer useful insights into how new technologies spread within firms at the organizational or community level, theories such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) are more suitable to capture individual decision-making. TAM (Davis, 1989) emphasizes that an individual’s intention to use technology is shaped by perceived usefulness and ease of use, while UTAUT (Venkatesh et al., 2003) extends this perspective by incorporating performance expectancy, effort expectancy, social influence, and facilitating conditions.

Overall, while DOI, TOE, TAM, and UTAUT each offer valuable insights into technology adoption, they have limitations when used independently. DOI primarily focuses on the characteristics of innovation and its diffusion within organizations or communities but does not specifically address individual attitudes or intentions to use technology (Sana'a, 2016), which are critical for understanding personal behavior toward technology adoption. By contrast, TAM and UTAUT focus on individual-level factors but do not fully incorporate the broader organizational and environmental conditions captured by the TOE framework.

Given these limitations, this study integrates TAM, UTAUT, and TOE to develop a more holistic framework for understanding digital marketing adoption in startup contexts. By embedding TAM and UTAUT constructs within the TOE framework, the study moves beyond examining technology adoption solely from either an organizational or an individual perspective. Instead, it enables the simultaneous consideration of technological, organizational, environmental, attitudinal, and behavioral factors that influence adoption decisions. This distinction is particularly meaningful in startup settings, where lean organizational structures often mean that managerial perceptions, organizational capabilities, and external environmental pressures interact closely in shaping technology-related decisions.

The integrated TOE - TAM - UTAUT framework thus examines not only whether startups adopt digital marketing, but also the depth, consistency, and organizational embeddedness of that adoption over time. Through sustainable use, digital marketing may evolve from a tactical tool into a core organizational capability that enhances customer engagement, market responsiveness, and strategic decision-making. Such capabilities are increasingly recognized as important foundations for long-term competitiveness and organizational resilience in emerging market contexts. Consistent with prior research, digital marketing adoption may therefore be viewed not merely as a technological decision, but as part of a broader organizational transformation process that supports firms' long-term development objectives (Bruce et al., 2023).

Digital Marketing Adoption Among Startups

TAM, UTAUT, TOE, and DOI are particularly relevant in the context of startups, as shown by studies such as those by Alenezi and Isa (2024) and Shahzad et al. (2020), which found that factors such as relative advantage, compatibility, and organizational readiness positively impact adoption behavior. Another example is the study conducted by Ahmad et al. (2018), which combined the TOE framework with elements of DOI to study social media adoption among SMEs in the UAE, showing that both technological and organizational factors significantly influence digital technology adoption. Moreover, in the Vietnam context, research on manufacturing SMEs by Nam (2014) found that innovation in production processes and marketing is statistically significant in influencing the overall adoption of new technologies.

In addition, an organization's decision to adopt a technology such as digital marketing also depends substantially on the hierarchical position of the decision-maker. In organizations, decisions can be classified by level: strategic, tactical, and operational (*Organizational Behaviour*, 2017). Strategic decisions set the organization's overall direction; tactical decisions determine implementation methods; and operational decisions are made daily by employees to run the organization. Based on this

classification, the adoption of digital marketing in startups is primarily a tactical (or higher level) decision governed by middle or top-level leaders because of its impact on organizational performance and long-term development. Startups typically operate with many resource constraints such as financial, human, and technological limitations, which make digital marketing adoption a managerial rather than purely operational decision (Gilmore et al., 2007; El-Shihy and Hassan, 2025). In addition, since sustainability in the digital era increasingly depends on the effective integration of technological innovations, managerial oversight is essential to ensure that digital marketing initiatives align with sustainable growth objectives (Saura et al., 2020). Lower-level employees may lack the ability to evaluate sustainability trade-offs such as whether digital marketing campaigns adhere to ethical communication or support circular business practices. Moreover, studies on technology adoption, including digital marketing (Awa et al., 2017; Tripopsakul, 2018), and studies conducted specifically in the sustainable development context (Bruce et al., 2023) also emphasize the role of senior management. Therefore, this study targets middle or higher managers in startups for data collection and analysis.

Hypothesis Development

Technological Context

The technological context refers to the application and characteristics of new technology within an organization, including both internal and external technologies related to the company and encompassing both equipment and processes (Tornatzky et al., 2013; Lippert and Govindarajulu, 2006). Research has confirmed the importance of primary and secondary structural factors influencing the technological context. Key factors include: (1) Relative Benefits: the extent to which the technology is considered superior to existing solutions (Alenezi and Isa, 2024); (2) Compatibility: the degree to which the technology aligns with existing values, past experiences, and the needs of potential users (Alenezi and Isa, 2024); (3) Complexity: the extent to which the technology is perceived as difficult to understand and use (Opasvitayarux et al., 2022); (4) Trialability: the extent to which a technology can be tested on a limited basis before a full adoption decision is made (Opasvitayarux et al., 2022); and (5) Observability: the extent to which the results of the technology are visible and accessible by others (Opasvitayarux et al., 2022).

According to the theory, a favorable technological context increases the likelihood of digital marketing adoption in startups. Therefore, this study proposes the following research hypotheses:

- H1a** Relative benefits positively influence the attitude toward using digital marketing in startups.
- H1b** Complexity positively influences the attitude toward using digital marketing in startups.
- H1c** Compatibility positively influences the attitude toward using digital marketing in startups.

Organizational Context

The organizational context is defined by the resources available to support the adoption of social media. These criteria include the size and scope of the business, support from experts and advisors, organizational culture, the complexity of the management structure, managerial creativity (Fityan and Huseynov, 2017), perceived self-efficacy, and prior technology experience (Alshamaila et al., 2013).

Business creativity is critical to the adoption of digital marketing. Specifically, research by Fityan and Huseynov (2017) confirms that higher levels of creativity among business owners lead to stronger intentions to adopt social media. Similarly, a study by Marcati et al. (2008) concludes that an innovative individual can adopt new technology or systems faster than others in similar social contexts. Startups with creative business models are more likely to view digital marketing as an essential tool for gaining a market edge (Opasvitayarux et al., 2022; Nguyen et al., 2022).

Support from experts and advisors is another critical factor in reducing psychological barriers to adopting digital marketing (Shahzad et al., 2020). Research by Tornatzky et al. (1990) and Venkatesh and Bala (2008) demonstrate that expert guidance helps reduce perceived risks and technical challenges, leading to more successful digital marketing implementations.

Furthermore, the adoption of information technology, e-services, or new internet-based systems also depends on users' prior experience with such technologies or systems (Alenezi and Isa, 2024; Shahzad et al., 2020). Previous studies have shown that technological experience positively influences the adoption of cloud computing (Alshamaila et al., 2013) and social media in business (Tripopsakul, 2018). Similarly, companies with prior experience in e-commerce are often more adaptable and can reduce the complexity of technology, enhancing their perception of its usefulness (Awa et al., 2015). Accordingly, this study proposes the following hypotheses:

- H2a** Information technology experience positively influences attitudes toward the use of digital marketing in startups.
- H2b** Business creativity positively influences attitudes toward the use of digital marketing in startups.
- H2c** Support from experts/advisors positively influences attitudes toward the use of digital marketing in startups.

Environmental Context

The environmental context refers to the external conditions under which a company operates, including industry characteristics, competition, and access to government and external resources (Lippert and Govindarajulu, 2006; Bahukeling et al., 2024). This context includes competitive pressure, customer demands, and social expectations (Tripopsakul, 2018; Ramdani et al., 2013). Studies have shown that in a favorable environmental context, companies are more likely to adopt e-commerce (Alam et al., 2005) and social media (Andzulis et al., 2012). Accordingly, this study proposes the following hypotheses:

- H3a** Competitive pressure positively influences the use behavior of digital marketing in startups.
- H3b** Customer pressure positively influences the use behavior of digital marketing in startups.
- H3c** Social pressure positively influences the use behavior of digital marketing in startups.

Attitude Toward and Intention to Use Digital Marketing Among Startups

Fishbein and Ajzen (1975) defined behavioral intention as an individual's expressed readiness to perform a specified action, viewing it as the immediate precursor to behavior itself. Within the Theory of Reasoned Action (TRA), they highlight that the primary determinant of human behavior is the intention to perform that behavior. One of the two key factors influencing behavioral intention is an individual's attitude toward the behavior. According to Davis (1989), attitude plays a partial mediating role in shaping the intention to use. Based on this theoretical position, this study proposes the following hypothesis:

- H4** Attitude toward using digital marketing in startups positively impacts the intention to use digital marketing in these businesses.

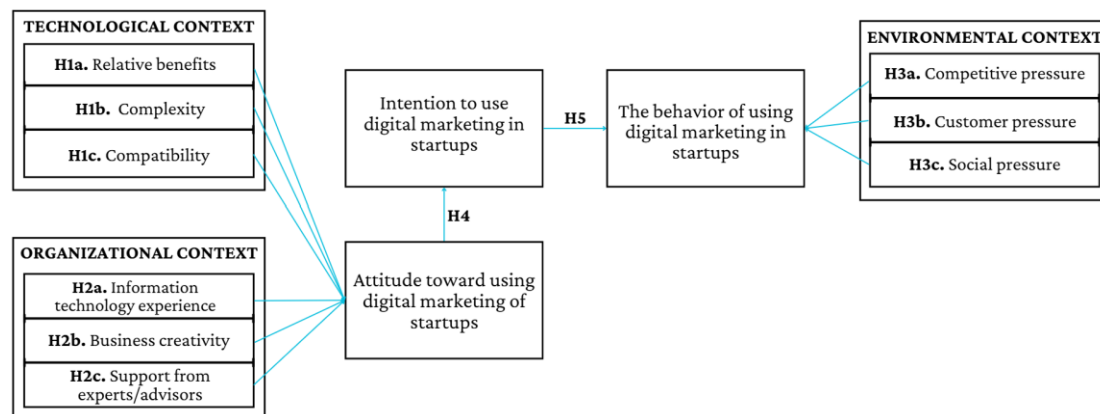
Intention to Use and Use Behavior of Digital Marketing Among Startups

In this study, the authors assume that decision-makers with a strong behavioral intention are more likely to implement digital marketing within their organizations. Researchers often use the determinants of the Theory of Planned Behavior (TPB)—attitude, subjective norms, and perceived behavioral control—to predict actual behavior at the individual level. However, aligning with previous organizational-level studies (Mishra et al., 2014; Khan et al., 2020), the authors aim to predict actual behavior as an outcome at the organizational level. This approach is known as a cross-level relationship (Cordano and Frieze, 2000). Accordingly, this study proposes the following hypothesis:

- H5** The intention to use digital marketing in startups has a positive impact on the use behavior of digital marketing in these businesses.

Based on the theoretical background and hypotheses formulated above, the conceptual framework of the present study is depicted in Figure 1.

Figure 1: Conceptual framework



Methodology

Qualitative Research

Initially, qualitative research was conducted to assess the applicability of the proposed research model, explore factors influencing digital marketing adoption behavior in startups, and refine measurement items for the subsequent survey. In this phase, the authors conducted in-depth interviews with 15 participants, all of whom held managerial positions or higher in various startup businesses, along with marketing experts, ensuring diverse representation across industries and company sizes. Each session lasted approximately one hour, following a semi-structured guide designed to elicit insights into factors affecting adoption behavior.

The interviews were audio-recorded, transcribed verbatim, and analyzed using thematic analysis following Braun and Clarke (2006). To ensure objectivity and authenticity, inductive coding was applied to identify recurring patterns and categories related to technological, organizational, and environmental factors. Coding was conducted by the lead researcher across all 15 transcripts, progressing from initial open coding through iterative grouping into sub-themes corresponding to the four core interview areas: model fit, factor sufficiency, scale clarity, and hypothesized relationships. To enhance credibility, an audit trail was maintained throughout the analytical process, and emerging themes were reviewed through peer debriefing with one academic expert external to the research team, who confirmed their alignment with the theoretical framework. Reflexivity was also practiced by documenting analytical decisions at each stage to minimize researcher bias.

To illustrate the coding process, representative examples are provided as follows. The statement “Digital marketing helps us reach customers faster and at lower cost than traditional channels” was initially coded as relative advantage (cost efficiency) and later consolidated into the broader theme of Technological Context. Similarly, “Our leaders actively encourage the team to experiment with new digital tools” was coded as managerial support, incorporated into Organizational Context under Support from experts and advisors. In addition, codes were reviewed iteratively to ensure internal consistency and conceptual clarity.

The emerging themes informed the refinement of measurement items by clarifying construct boundaries and rewording items for contextual relevance to Vietnamese startups. Specifically, several items within the Technological Context construct were revised to better reflect the multi-platform digital environments commonly encountered by Vietnamese startups, ensuring greater clarity and practical relevance for survey respondents. Regarding the relationships among model variables, experts and business representatives agreed that factors related to the technological and organizational contexts influence attitude, which in turn affects intention, and intention subsequently leads to adoption behavior. Meanwhile, environmental factors were confirmed to have a potential direct impact on behavior.

Quantitative Research

In the following stage, a preliminary quantitative study was conducted to validate the measurement instruments and assess the feasibility of the proposed research model. The analysis included reliability testing, exploratory factor analysis (EFA), and multivariate regression. The results confirmed that the model was applicable in the Vietnamese context and that the measurement scales demonstrated acceptable reliability. The EFA identified two items (KNTT5 and KNTT6) for removal due to low factor loadings, while the regression analysis revealed positive associations between the independent variables and the dependent variable, supporting the model's suitability for the main study.

In the official quantitative research, the sampling framework targeted individuals holding managerial positions at the departmental level or higher in startup businesses across Vietnam. The authors reached out to these businesses through incubators, startup clubs affiliated with provincial Departments of Science and Technology, and startup associations on social media platforms. The minimum sample size was set at 225, following the requirement of at least five observations per observed variable (Bollen, 2014; Hair et al., 1998). To mitigate common method bias, several procedural remedies were implemented during the questionnaire design and data collection process based on studies by Podsakoff et al. (2003) and MacKenzie and Podsakoff (2012). First, respondent anonymity and confidentiality were assured to reduce evaluation apprehension and encourage honest responses. Additionally, different item formats (e.g., varying scale anchors and wording direction) were used to minimize response pattern consistency and reduce social desirability effects. Furthermore, the order of questions was randomized to prevent respondents from inferring relationships among constructs, thereby lowering the risk of common method bias.

After distributing the questionnaire, the authors obtained 551 valid responses. The profiles of the respondents are presented in Table 1. Based on the collected data, the analysis was conducted using the structural equation modeling (SEM) framework. Initially, Cronbach's alpha was used to assess the internal consistency of the measurement scales. This was followed by EFA to identify the underlying factor structure and refine the measurement items by reducing the number of observed variables. Subsequently, confirmatory factor analysis (CFA) was carried out to validate the theoretical measurement model. Finally, SEM was employed to assess the model fit and test the research hypotheses.

Table 1: Respondents' profiles

Respondent Category		Quantity	%
Headquarters by Region	Northern Region	219	39.75
	Central Region	134	24.32
	Southern Region	198	35.93
Company Type	Joint-stock Company	157	28.49
	Limited Liability Company	200	36.30
	Private Enterprise	194	35.21
Position	Managing Director	165	29.94
	Deputy Managing Director	155	28.13
	Marketing Director or Equivalent	78	14.16
	Deputy Marketing Director or Equivalent	66	11.98
	Head of Marketing or Equivalent	52	9.44
	Deputy Head of Marketing or Equivalent	35	6.35

Results

First, Cronbach's Alpha was calculated for each variable group. Following Nunnally and Bernstein (1994), scales with Alpha > 0.7 and Corrected Item-Total Correlation > 0.4 are considered reliable. Results show all scales met these thresholds, qualifying them for further EFA analysis.

Table 2: Results of Cronbach's Alpha analysis

Factors	Cronbach's Alpha	Corrected Item - Total Correlation
Relative Benefits (LITD)	.839	.658 - .694
Complexity (PT)	.836	.645 - .707
Compatibility (KNTT)	.842	.603 - .736
Information technology experience (KNCN)	.814	.638 - .688
Business creativity (ST)	.798	.638 - .651
Support from experts/advisors (HT)	.863	.625 - .736
Competitive pressure (ALCT)	.869	.649 - .746
Customer pressure (ALKH)	.819	.669 - .696
Social pressure (ALXH)	.803	.629 - .679
Attitude toward using digital marketing (TD)	.784	.582 - .678
The intention to use digital marketing (YD)	.805	.595 - .691
The use behavior of digital marketing (UD)	.812	.645 - .679

Next, EFA was conducted following Nguyễn and Nguyễn (2009) using Principal Axis Factoring with Varimax rotation. The results met standard criteria: factor loadings ≥ 0.5 with cross-loading differences of at least 0.3, total variance explained $\geq 50\%$, KMO values > 0.5 , and a significant Bartlett's test ($p < 0.05$). All extracted factors had eigenvalues > 1 , and the factor loadings confirmed strong associations between items and their respective constructs.

Subsequently, CFA was performed with the results indicating that the model fit indices are as follows: Chi-square/df = 1.274, TLI = 0.978, NFI = 0.916, CFI = 0.980, GFI = 0.931, AGFI = 0.907 and RMSEA = 0.022. All indices met the required criteria: the

Chi-square had a p-value > 0.05 ; CMIN/df ≤ 2 , with some cases allowing CMIN/df ≤ 3 ; GFI, TLI, NFI and CFI are all ≥ 0.9 ; and RMSEA ≤ 0.08 (Hair et al., 1998) and AGFI ≥ 0.8 (Segars and Grover, 1993). Therefore, the model demonstrated good fit and reliability. In addition, the standardized root mean square residual (SRMR) result is 0.029, meeting the cutoff value of 0.08 (Hu and Bentler, 1999).

Furthermore, the study evaluated the measurement scales through composite reliability, convergent validity, and discriminant validity. Composite reliability (CR) assesses internal consistency, with values closer to 1 indicating stronger reliability (Nunnally and Bernstein, 1994). Convergent validity, measured by Average Variance Extracted (AVE), requires a threshold of 0.5 or higher (Hair, 2011). Discriminant validity is established when MSV $<$ AVE and the square root of the AVE exceeds inter-construct correlations (Hair, 2011; Sarstedt et al., 2021). As shown in Table 3, the scales demonstrate high reliability and satisfactory validity, confirming construct robustness.

The results of the CFA and the tests of convergent and discriminant validity (via the Fornell–Larcker criterion) also indicate that multicollinearity is not a concern (Hair, 2011; Kline, 2023). All constructs demonstrated adequate discriminant validity, as the square root of the AVE for each construct exceeded its inter-construct correlations (Fornell and Larcker, 1981). This suggests that the constructs are conceptually distinct and that multicollinearity among the latent variables is unlikely to bias the SEM results.

Table 3: Model validity measures

	CR	AVE	MSV	MaxR (H)	HT	ALCT	PT	LITD	KNTT	YD	UD	TD	ALXH	ALKH	ST	KNCN
HT	0.867	0.566	0.338	0.873	0.752											
ALCT	0.871	0.575	0.423	0.876	0.304	0.758										
PT	0.839	0.567	0.332	0.841	0.347	0.230	0.753									
LITD	0.841	0.570	0.441	0.843	0.333	0.286	0.529	0.755								
KNTT	0.847	0.581	0.330	0.855	0.365	0.264	0.510	0.537	0.762							
YD	0.811	0.590	0.538	0.822	0.305	0.287	0.240	0.292	0.287	0.768						
UD	0.810	0.587	0.439	0.812	0.315	0.650	0.210	0.315	0.298	0.481	0.766					
TD	0.788	0.553	0.538	0.789	0.581	0.354	0.576	0.664	0.575	0.733	0.431	0.744				
ALXH	0.805	0.579	0.439	0.809	0.300	0.433	0.123	0.241	0.204	0.227	0.663	0.284	0.761			
ALKH	0.824	0.610	0.315	0.825	0.345	0.554	0.185	0.274	0.262	0.311	0.561	0.348	0.443	0.781		
ST	0.801	0.573	0.312	0.801	0.478	0.434	0.332	0.314	0.332	0.337	0.362	0.558	0.307	0.415	0.757	
KNCN	0.820	0.604	0.354	0.823	0.579	0.343	0.404	0.399	0.409	0.346	0.335	0.595	0.283	0.359	0.499	0.777

In the final stage of the analysis, the authors conducted SEM to examine the impact of nine factors from the technology-organization-environment context on the dependent variables. The analysis reveals that the model fit indicators include: Chi-square/df = $1.317 < 3$, TLI = $0.974 > 0.9$, NFI = $0.911 > 0.9$, CFI = $0.977 > 0.9$, GFI = $0.919 > 0.9$, AGFI = $0.906 > 0.9$ and RMSEA = $0.024 < 0.08$, indicating that the model is well-suited to the market (Hair et al., 1998; Segars and Grover, 1993). Additionally, the SRMR value of 0.034 falls well within the acceptable threshold of 0.08 (Hu and Bentler, 1999). Furthermore, the p-values of the theoretical model estimation in the SEM analysis range from 0.000 to 0.022, achieving the necessary significance level (95% confidence). Therefore, the research hypotheses are accepted based on the available data.

Table 4: Summary of SEM coefficients

			Estimate	SE	CR	P-value
TD	<---	LITD	.220	.039	5.694	***
TD	<---	PT	.109	.045	2.428	.015
TD	<---	KNTT	.099	.040	2.451	.014
TD	<---	KNCN	.123	.046	2.673	.008
TD	<---	ST	.169	.043	3.970	***
TD	<---	HT	.149	.041	3.621	***
YD	<---	TD	.832	.068	12.264	***
UD	<---	YD	.204	.032	6.333	***
UD	<---	ALCT	.270	.041	6.634	***
UD	<---	ALKH	.097	.042	2.297	.022
UD	<---	ALXH	.321	.039	8.145	***

Based on the results presented in Table 5, relative benefits (LITD) have the strongest positive effect on startups' attitude toward digital marketing (TD), with a standardized coefficient of 0.380. Attitude (TD) also significantly drives intention to use digital marketing (YD), with a coefficient of 0.668. Regarding digital marketing use behavior (UD), social pressure (ALXH) exerts the strongest influence (0.411), followed by competitive pressure (ALCT), intention (YD), and customer pressure (ALKH), though with gradually weaker effects.

Table 5: Standardized regression coefficients of SEM

			Estimate
TD	<---	LITD	.380
TD	<---	PT	.123
TD	<---	KNTT	.124
TD	<---	KNCN	.149
TD	<---	ST	.198
TD	<---	HT	.185
YD	<---	TD	.668
UD	<---	YD	.259
UD	<---	ALCT	.350
UD	<---	ALKH	.117
UD	<---	ALXH	.411

Discussion

Theoretical Contribution

From a theoretical perspective, this study critically assesses existing research and develops a well-grounded empirical model. It integrates the TOE framework with TAM and UTAUT to analyze digital marketing adoption. The results highlight the factors influencing digital marketing usage in startups in Vietnam and may offer insights relevant to similar developing contexts.

In the technological context, relative benefits and compatibility positively influenced attitudes toward digital marketing adoption, consistent with previous studies (Alenezi and Isa, 2024). Interestingly, complexity, typically a barrier, also fostered adoption,

suggesting that more complex technologies offer substantial benefits, motivating investment in learning (Opasvitayarux et al., 2022). From an organizational perspective, IT experience and expert support positively influenced digital marketing adoption, aligning with Alenezi and Isa (2024) and Shahzad et al. (2020). The effect of business creativity is also consistent with findings of Opasvitayarux et al. (2022). In the environmental context, competitive and customer pressures positively impacted adoption, consistent with Ramdani et al. (2013). The emergence of social pressure as the strongest factor also highlights the role of societal and government influences on startups' business decisions (Bahukeling et al., 2024). In addition, the pathway from attitude to intention and actual adoption remains consistent with Davis (1989) and Shahzad et al. (2020).

Interestingly, perceived organizational readiness, such as IT experience and expert support, had a weaker impact than expected, contrasting with findings in more digitally mature contexts (Shahzad et al., 2020). This suggests that for Vietnamese startups, external pressures and perceived benefits may be more influential in adoption decisions. However, while IT experience and expert support were statistically significant, they did not exert strong direct effects on adoption behavior. This may reflect the limited IT infrastructure in early-stage startups in emerging markets like Vietnam, where reliance on external consulting instead of internal capabilities is common. Business creativity, though positively associated with attitude, might not fully drive behavioral change due to resource constraints.

Practical Contribution

From a practical standpoint, this research helps startups identify the key factors necessary for the effective implementation of digital marketing. The findings reveal that technological, organizational, and environmental factors can have direct or indirect impacts on digital marketing adoption.

Notably, social pressure has the strongest direct influence on actual adoption behavior ($\beta = 0.411$). This result reflects a reality in developing markets such as Vietnam, where startups often operate in externally influenced ecosystems - responding more readily to government policies, customer expectations, or peer behavior than to internal assessments of technological value. Meanwhile, relative benefits are critical for shaping attitudes and intentions ($\beta = 0.380$) toward digital marketing adoption in startups. This distinction highlights the different pathways through which these factors operate.

Although the study is based on Vietnamese startups, the findings of this study may offer tentative insights for comparable emerging markets such as Indonesia, Cambodia, or the Philippines. These countries share comparable institutional and digital development challenges including digital readiness, formal institutions, regulation, taxation, and market conditions. Nonetheless, cross-country validation would be needed before broader generalizations are drawn.

Limitations and Future Research

Nonetheless, the research has certain limitations related to its design and scope, which suggest directions for future research. Notably, the analysis does not differentiate between industries or business types, which may exhibit unique digital marketing

adoption behaviors. Future studies could conduct industry-specific investigations for more tailored recommendations. In addition, although the study has examined the reliability and validity of measurement scales through Cronbach's Alpha, EFA, CFA, and SEM, the issue of endogeneity should be considered. Future research could employ longitudinal or instrumental-variable techniques to address it, as recommended by Antonakis et al. (2010). Advanced estimation approaches, such as copula-based modeling, have been proposed to jointly address endogeneity and error dependence (Park and Gupta, 2012). Ultimately, this study utilizes several factors that are relatively common in previous research, such as IT experience in the organizational context or competitive pressure in the environmental context. Given the differences in micro-level contexts among developing countries, future studies may explore alternative influencing factors. For instance, organizational size (Ramdani et al., 2013), legal support (Shahzad et al., 2020), and adoption costs (Ullah et al., 2023) could provide valuable insights into this area.

Practical Implications for Asian Business

In today's dynamic digital environment, startups in developing Asian economies continue to face significant and comparable challenges in adopting digital marketing for sustainable growth (Sharma, 2024; Chakraborti et al., 2022). In particular, ASEAN (2021) reported that the digital skills and talent dimension ranks lowest among all indicators of digital integration across Southeast Asian countries. Several nations, including Myanmar (19.58), Cambodia (36.56), and Vietnam (38.38), scored below the regional average of 48.21 or other benchmark countries' scores (China: 64.76; South Korea: 53.77), indicating a generally low level of digital readiness within the region. In addition, according to the Global Index of Digital Entrepreneurship Systems (GIDES), many Asian economies such as Thailand, Vietnam, Indonesia, and Sri Lanka scored only between 10 and 22.5 out of 100 in the Formal institutions, regulation, and taxation pillar (Autio et al., 2025). Except for regional leaders like Singapore and South Korea, this finding highlights the persistent institutional constraints within these countries' entrepreneurial ecosystems, where complex regulatory frameworks and burdensome taxation continue to hinder digital business development. Consequently, the practical strategies proposed in this study could be adapted across such contexts.

By demonstrating how technological, organizational, and environmental factors jointly shape digital marketing adoption, this research provides valuable guidance for startup leaders seeking to integrate digital tools effectively into their strategies and enhance long-term competitiveness. Firstly, as technological factors exert a significant indirect impact on adoption, Asian startups should prioritize building robust technological capabilities. This includes implementing tailored IT systems aligned with organizational needs and budget constraints, establishing clear technical roadmaps to ensure compatibility across components, and integrating data from digital campaigns with traditional sources. Such integration enables a comprehensive view of both online and offline markets, allowing startups to optimize targeting, investment, and channel coherence.

Secondly, the indirect impact of organizational factors underscores the need to strengthen employee skills and creativity in digital marketing. As strategic assets, employees must develop technical, analytical, and adaptive capabilities to keep pace

with market shifts, customer-centric strategies, and new technologies. Investing in training and continuous learning enables startups to build agile, data-driven teams. Additionally, fostering a culture of creativity through flexible product design and agile methodologies can accelerate time-to-market, drive innovation, and enhance responsiveness to shifting customer needs.

Lastly, given the direct effect of environmental factors on adoption, startups must sharpen their competitive capabilities. This begins with deepening customer insights beyond website traffic data by aggregating behavioral signals across multiple digital touchpoints to better understand the customer journey and conversion drivers. Simultaneously, maintaining a consistent presence across web and social media platforms is essential for building digital brand identity, a foundational asset that, when integrated into broader marketing efforts, helps mitigate reputational risks and sustain long-term competitive positioning.

By taking these actions, Asian startups may be better positioned to implement digital marketing effectively, supporting their broader path toward sustainable growth. Digital marketing techniques may help companies utilize technology and harness creativity to produce educational content that raises consumer awareness about climate change and global warming. Through proper delivery methods and content creation, businesses can publish information on sustainability, engaging with environmentally conscious audiences and reaching across geographical barriers to increase accessibility. Furthermore, using social media, content marketing, and targeted advertising, digital campaigns can inspire individuals to adopt sustainable habits and make environmentally friendly choices. Digital marketing also generates extensive data that can be analyzed to understand consumer behavior, providing businesses and organizations with insights into trends, preferences, and demand related to sustainability, which may inform the refinement of strategies and the development of more eco-friendly products. Future research incorporating sustainability performance metrics could empirically validate these conceptual links, providing a more complete picture of digital marketing's potential role in sustainable development.

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